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| 10/723,189 | 11/26/2003 | Gopal B. Avinash | 136854GS/YOD GEMS:0259 | 9027 |

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| 7590          04/05/2007 | EXAMINER |
| Patrick S. Yoder FLETCHER YODER P.O. Box 692289 Houston, TX 77269-2289 | MOTSINGER, SEAN T |

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| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☐ Responsive to communication(s) filed on <u>26 November 2003</u>.
2a) ☐ This action is **FINAL**.     2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) <u>1-29</u> is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) <u>1-29</u> is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on <u>11/26/2003</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All   b) ☐ Some * c) ☐ None of:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____.
   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**
1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## *Objections to the Specification*

The follow quotations of 37 CFR § 1.75(a) and (d)(1) provide the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out
> and distinctly claiming the subject matter which the applicant regards as his invention or
> discovery.

> (d)(1) The claim or claims must conform to the invention as set forth in the remainder of the
> specification and the terms and phrases used in the claims must find clear support or antecedent
> basis in the description so that the meaning of the terms in the claims may be ascertainable by
> reference to the description. (See § 1.58(a)).

1.      The specification is objected to under 37 CFR § 1.75(a) and (d)(1) as failing to

particularly point out and distinctly claim the subject matter which the applicant

regards as his invention or discovery, and failing to conform to the invention as set

forth in the remainder of the specification.  Claims 8, 16 state that a non-linear

function could be used however no such function is disclosed in the specification

only a mere reference that it could be done this is not adequate support for the

claimed element.  Also page 9 of the specification pixels discloses non-structure

pixels as ones with gradients below a certain threshold however claims 3 and 4 are

inconsistent with this notion and are confusing.  Please clarify the specification to

remedy and such inconsistencies.

## *Objections to the Claims*

The follow quotations of 37 CFR § 1.75(a) and (d)(1) provide the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out
> and distinctly claiming the subject matter which the applicant regards as his invention or
> discovery.

> (d)(1) The claim or claims must conform to the invention as set forth in the remainder of the
> specification and the terms and phrases used in the claims must find clear support or antecedent

basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description. (See § 1.58(a)).

2.      Claims 3 and 4 and 14-16 are objected to under 37 CFR § 1.75(a) and (d)(1) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery, and failing to conform to the invention as set forth in the remainder of the specification.

3.      Re claims 3 and 4, Page 9 of the specification pixels discloses non-structure pixels as ones with gradients below a certain threshold however claims 3 and 4 are inconsistent with this notion and are confusing. For the purposes of examination examiner has interpreted claim 3 to read "...wherein the first group of pixels represent non-structural and the second group of pixels represent structural pixels..."

4.      Re claims 14-16, Claims 14-16 are objected because 14-16 should depend from claim 12 for proper antecedent support.

### *Rejections Under 35 U.S.C. 101*

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 26-29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 26 and 27 claim a computer program which is abstract and not statutory the claim should read "A computer storage medium storing therein a computer program comprising code to:..." Claims 28 and 29 claim an image which is merely data and therefore is non statutory.

## *Rejections under 35 U.S.C. 112 First Paragraph*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 8 and 16 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 8, 16 state that a non-linear function could be used however no such function is disclosed in the specification only a mere reference that it could be done this is not adequate support for the claimed element.

## *Rejections under 35 U.S.C. 112 Second Paragraph*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7.      Claims 8 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

8.      Re Claims 8 and 16 these claims are not enabled (see 112 1rst rejection) and

are therefore unclear

## *Rejections under 35 U.S.C. 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9.  Claims 1-7, 9-15, 17-29 are rejected under 35 U.S.C. 102(b) as being anticipated by

Fan et al USPGPUB 2002/0093686.

10.     Re claim 1 Fan discloses a method for processing image data comprising:

identifying a first group of pixels exhibiting a first characteristic (low local contrast

paragraph 26 line 1-3 ); identifying a second group of pixels exhibiting a second

characteristic (high local contrast paragraph 26 lines 4-5); identifying a third group of

pixels exhibiting the first and second characteristics (moderate local contrast paragraph 26 lines 11-12); processing the first group of pixels in accordance with at least a first operation (low pass filtering paragraph 26 line 5); processing the second group of pixels in accordance with at least a second operation (notch filtering paragraph 26 line 9); processing the third group of pixels in accordance with the at least first and second operations (low pass and notch filtering paragraph 26 lines 14-15); and blending (linear combination paragraph 26 lines 12-14) values resulting from processing of the third group of pixels by the first process (low pass filtering paragraph 26 lines 14-15) with values resulting from processing of the third group of pixels by the second process ( notch filtering paragraph 26 lines 14-15).

11.    Re claim 2 Fan further discloses combining the blended values with values of pixels from the first and second groups resulting from their respective processing (paragraph 26 note these values are clearly combined to form image "Pout").

12.    Re claim 3 Fan further discloses wherein the first group of pixels represent non-structural pixels (areas of low contrast paragraph 26 Note examiner is interpreting structure to be high frequency detail areas of the image which are areas of high contrast) and the second group of pixels represent structural pixels (areas of high contrast paragraph 26).

13.     Re claim 4 Fan further discloses establishing first and second thresholds, and

wherein the first group of pixels are identified as having values falling below the first

threshold (see claim 5 element e), the second group of pixels are identified as

having values falling above the second threshold (claim 5 element f), and the third

group of pixels are identified as having values between the first and second

thresholds (claim 5 element g).


14.     Re claim 5 Fan further discloses wherein the thresholds are gradient thresholds (

paragraph 22 note the contrast values is calculated using the maximum difference

between pixels in a window which is a form of gradient meaning the thresholds will

also be gradient based).


15.     Re claims 6 Fan further discloses wherein the blending is performed based upon

relative proximity of each pixel value to the first and the second threshold (see

paragraph 24 equation 1 note the blending equation is based on the value alpha

which is threshold meaning the blending is performed based upon relative proximity

of each pixel value to the first and the second threshold.


16.     Re claim 7 Fan further discloses wherein the blending is based on a linear

function (linear combination paragraph 26).

17.   Re claim 9 Fan further discloses wherein the operations are selected from a

group consisting of enhancement, sharpening, smoothing, deconvolution,

extrapolation, interpolation, compression, digital half-toning, and contrast matching.

(see abstaract note the enhancement by sharpening (notch-filter)  and

smoothing(low pass filter) is being done)

18.   Re claim 10 Fan further discloses wherein the third group of pixels are processed

in accordance with the first operation (low pass filtering) along with the first group of

pixels (low contrast pixels), and are processed in accordance with the second

operation (notch filtering) along with the second group of pixels (high contrast

pixels). See paragraph 26.

19.   Re claim 11 Fan discloses A method for processing image data comprising:

establishing first and second thresholds (claim 5 elements e and f); identifying a first

group of pixels having a values falling below the first threshold (claim 5 element e);

identifying a second group of pixels having a value falling above the second

threshold (claim 5 element f); identifying a third group of pixels having a value

between the first and second thresholds (claim 5 element g); processing the first

group of pixels in accordance with at least a first operation (low pass filtering claim 5

element e) ; processing the second group of pixels in accordance with at least a

second operation(notch filtering claim 5 element f); and processing the third group of

pixels in accordance with the at least first and second operations(claim 5 element

g);.

20.    Re claim 12 Fan further discloses blending (linear combination paragraph 26

lines 12-14) values resulting from processing of the third group of pixels by the first

process (low pass filtering paragraph 26 lines 14-15) with values resulting from

processing of the third group of pixels by the second process ( notch filtering

paragraph 26 lines 14-15).

21.    Re claim 13 Fan further discloses wherein the thresholds are gradient thresholds

( paragraph 22 note the contrast values is calculated using the maximum difference

between pixels in a window which is a form of gradient meaning the thresholds will

also be gradient based).

22.    Re claims 14 Fan further discloses wherein the blending is performed based

upon relative proximity of each pixel value to the first and the second threshold (see

paragraph 24 equation 1 note the blending equation is based on the value alpha

which is threshold meaning the blending is performed based upon relative proximity

of each pixel value to the first and the second threshold.

23..    Re claim 15 Fan further discloses wherein the blending is based on a linear

function (linear combination paragraph 26).

24.     Re claim 17 Fan further discloses wherein the operations are selected from a

group consisting of enhancement, sharpening, smoothing, deconvolution,

extrapolation, interpolation, compression, digital half-toning, and contrast matching.

(see abstaract note the enhancement by sharpening (notch-filter)  and

smoothing(low pass filter) is being done)


25.     Re claim 18 Fan further discloses combining the blended values with values of

pixels from the first and second groups resulting from their respective processing

(paragraph 26 note these values are clearly combined to form image "Pout").


26.     Re claim 19 Fan further discloses wherein the third group of pixels are processed

in accordance with the first operation (low pass filtering) along with the first group of

pixels (low contrast pixels), and are processed in accordance with the second

operation (notch filtering) along with the second group of pixels (high contrast

pixels). See paragraph 26.

13. The method of claim 11, wherein the thresholds are gradient thresholds.


27.     Re claim 20 Fan discloses a system for processing image data comprising: a

data repository for storing image data (note the image must be stored somewhere

while processing); a processing circuit (note fan discloses using a processor for his

system, see claim 11) configured to access image data from the repository (note the

processor must have access to the image data), to separate the data representative

of pixels into first (not high contrast) and second groups (not low contrast) and an

overlapping group (moderate contrast see paragraph 26) , to process the first and

second groups in accordance with first (low pass filter) and second operations(high

pass filter), respectively, and to process the third group in accordance with both the

first and second operations (see paragraph 26), and to combine the results of the

processing to obtained processed image data (Pout see paragraph 26).


28.     Re claim 21 Fan further discloses an operator workstation (processing system

paragraph 18) for configuring the operations and for viewing images resulting from

the processing.


29.     Re claim 22 Fan further discloses an image data acquisition (scanner paragraph

18) system for generating the image data.


30.     Re claim 23 Fan further discloses wherein the image data acquisition system is

selected from a group consisting of MRI systems, CT systems, PET systems,

ultrasound systems, X-ray systems and photographic systems. (note a scanner is a

photographic system see paragraph 18)


31.     Re claim 24, Claim 24 is interpreted to invoke 112 6th paragraph. Claim 24 is

described as the means for performing the steps of claim 1, this has been

interpreted to be a work station configured with the appropriate software to perform the method. Fan discloses performing his method this way in claim 11.

32.    Re claim 25, Claim 25 is interpreted to invoke 112 6$^{th}$ paragraph. Claim 25 is described as the means for performing the steps of claim 11, this has been interpreted to be a work station configured with the appropriate software to perform the method. Fan discloses performing his method this way in claim 11.

33.    Re claim 26, Claim 26 is a computer readable medium storing code to perform the method of claim 1. Fan also discloses software for performing his method in claim 11.

34.    Re claim 27, Claim 27 is a computer readable medium storing code to perform the method of claim 1. Fan also discloses software for performing his method in claim 11.

35.    Re claim 28 Fan discloses an image produced by the method of claim 1. ( Note Pout is the output image see paragraph 26)

36.    Re claim 29 Fan discloses an image produced by the method of claim 11. ( Note Pout is the output image see paragraph 26)

## *Rejections Under 35 U.S.C. 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

37.    Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Fan in view of Kang US 7006709.

38.    Re claim 8 Fan discloses all of the elements of claim 1. Fan does not disclose

wherein the blending is based on a non-linear function. Kang discloses using

Blending for a non-linear function see column 14 line 32. The motivation to combine

is that Keng discloses linear and non-linear blending as interchangeable. At the time

of the invention, it would have been obvious to a person of ordinary skill in the art to

combine Fan with Keng.

39.    Re claim 26 Fan discloses all of the elements of claim 1. Fan does not disclose

wherein the blending is based on a non-linear function. Kang discloses using

Blending for a non-linear function see column 14 line 32. The motivation to combine

is that Keng discloses linear and non-linear blending as interchangeable. At the time

of the invention, it would have been obvious to a person of ordinary skill in the art to combine Fan with Keng.

### Conclusion

40.     Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Motsinger whose telephone number is 571-270-1237. The examiner can normally be reached on 9-5 M-F.

41.     If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

42.    Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system.  Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR

only.  For more information about the PAIR system, see http://pair-direct.uspto.gov.

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automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-

272-1000.

Motsinger
3/29/2007

JINGGE WU
SUPERVISORY PATENT EXAMINER